USER'S MANUAL for MPNC100 series

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1. Introduction

To grant a fast setup of the device please follow carefully the information in this manual.

1.1. Staff skill

Products described in this manual are devoted to PLC programmers or automation experts only. MECT S.r.l. declines any responsibility about malfunctioning or damage caused by incorrect use of MECT devices, due to noncompliance to this manual information. MECT S.r.l has an help desk.

1.2. Symbols

Danger
Follow this advice to avoid people injury.

Warning
Follow this advice to protect the device.

Caution
Follow this advice to have a more effective performance.

ESD (Electrostatic discharge)
Danger: possibly damage due to Electrostatic discharge.

Note
Step to follow for a correct installation.

Additional information

1.3. Security

Attention
Switch off devices before connecting them.

Attention
MPNC100 must be mounted inside racks and accessed by qualifyed personnel only.

ESD (Electrostatic discharge)
Modules have electronic components that can be damaged by. electrostatic discharge. Be sure to be connected to ground when handle the devices.

The instrument has no power switch and no internal fuse, but it powers on immediately after connecting a correct power supply input (check the power supply value on the instrument label). Keep the power supply line as short as possible and keep it separate from other power lines.
For security reasons it is necessary to have a 2 section power switch with a fuse near the instrument and easily replaceable.
Avoid the presence of other power actuators in the same control panel, high humidity, excessive heat and corrosive gas.
Instruments must have a power supply from security transformers or SELV transformers.

2. MPNC100 CANopen

2.1. System description

MPNC100 is composed by 2 boards, one mounted on a DIN rail (pink in figure) and one expansion board (gray in figure) for analogue and digital Inputs and digital output expansion. MPNC100 communicates with master by a CANopen line.

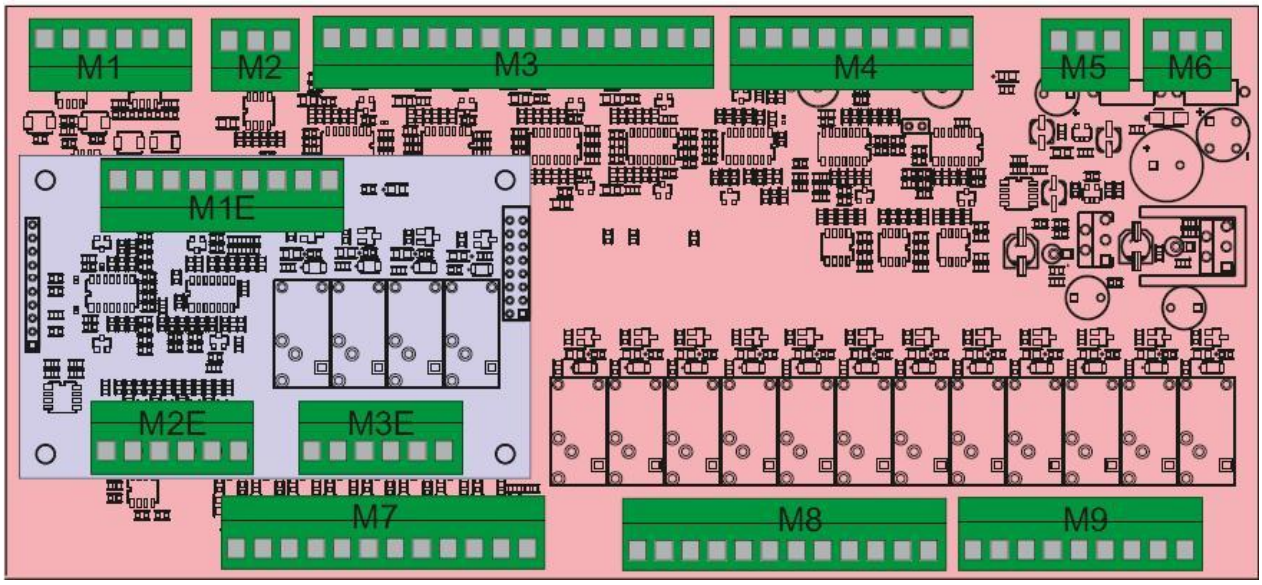


Figure 2-1 Layout MPNC100

2.2. Technical data

Power supply	
24VAC – 24V VDC	

Input power	
MPNC100	3.0 W

Analogue Inputs	
Base board	2 inputs for TA 50Amax (with current transformer SBT002 –itacoil-) 1 input for TV(2.5V=400Vac with voltage transformer SVL101801 –itacoil-) 2 analogue inputs 4÷20mA For models **MPNC100 01 and MPNC100 03** 8 input for PT100 For models **MPNC100 02 and MPNC100 04** 4 inputs for PT100 4 inputs 0-10V
Expansion Board For models **MPNC100 01 and MPNC100 02**	2 inputs for PT100 2 analogue inputs 4÷20mA

Analogue outputs	
Base board	1 analogue output 0÷10V 10 bits
Expansion board	-

Digital Inputs	
Base board	9 NPN / PNP inputs (configurable on request)
Expansion board	4 NPN inputs

Digital Outputs	
Base board	12 relay outputs
Expansion board	4 relay outputs

Bus di campo	
CANopen	Up to 1Mbit/s

Mechanic	
Material	Open board
Dimensions with expansion board W x H x L	110 x 54 x 240
Mounting	DIN 35
Thermal characteristics	
Working Temperature	0 °C ... 55 °C
Storage Temperature	-20 °C ... +85 °C
Umidity	5 % to 95 % no condensation
Isolation	
Air	acc. to IEC 60664-1
Pollution degree acc. to IEC 61131-2	2
IP protection	
IP protection	IP 00
Electromagnetic compatibility	

Industial Immunity acc. to EN 61000-6-2 (2001)

Test specification	**Values**		**Class**	**Parameter**
EN 61000-4-2 ESD	4 kV/8 kV (contact/air)		2/3	B
EN 61000-4-3 electromagnetic fields	10 V/m 80 MHz ... 1 GHz		3	A
EN 61000-4-4 burst	1 kV/2 kV (data/supply)		2/3	B
EN 61000-4-5 surge	Data:	-/- (line/line)		B
		1 kV (line/earth)	2	

	DC supply:	0.5 kV (line/line)	1	B
		0.5 kV (line/earth)	1	
	AC supply:	1 kV (line/line)	2	B
		2 kV (line/earth)	3	
EN 61000-4-6 RF disturbances	10 V/m 80 % AM (0.15 ... 80 MHz)		3	A

Industrial Emission acc. to EN 61000-6-4 (2001)			
Test specification	**limit values/IQPI**	**Frequency range**	**Distance**
EN 55011 (AC supply, conducted)	79 dB (µV)	150 kHz ... 500 kHz	
	73 dB (µV)	500 kHz ... 30 MHz	
EN 55011 (radiated)	40 dB (µV/m)	30 MHz ... 230 MHz	10 m
	47 dB (µV/m)	230 MHz ... 1 GHz	10 m

Industrial Emissionacc. to EN 61000-6-3 (2001)			
Test specification	**limit values/IQPI**	**Frequency range**	**Distance**
EN 55022 (AC supply, conducted)	66 ... 56 dB (µV)	150 kHz ... 500 kHz	
	56 dB (µV)	500 kHz ... 5 MHz	
	60 dB (µV)	5 MHz ... 30 MHz	
EN 55022 (DC supply/data, conducted)	40 ... 30 dB (µA)	150 kHz ... 500 kHz	
	30 dB (µA)	500 kHz ... 30 MHz	
EN 55022 (radiated)	30 dB (µV/m)	30 MHz ... 230 MHz	10 m
	37 dB (µV/m)	230 MHz ... 1 GHz	10 m

Attention
Mount on rack with no more than 55 °C

2.3. Installation

2.3.1. Distance

System must be mounted to grant heat exchange and wiring space. Avoid wiring overlap for electromagnetic compatibility.

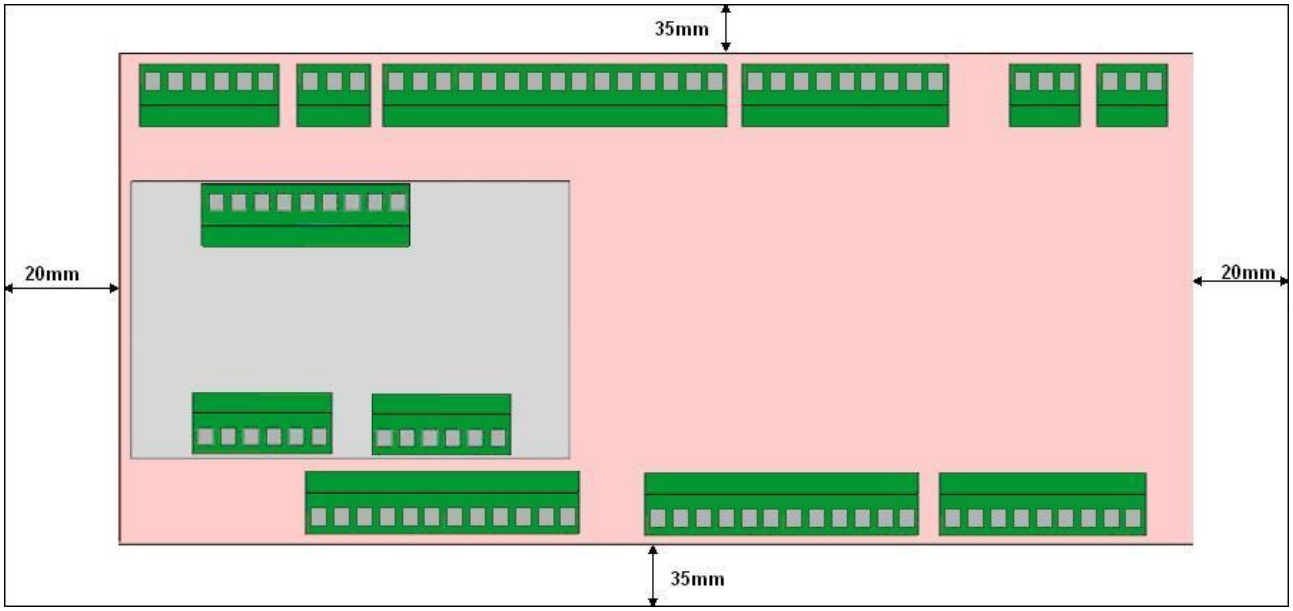


Figure 2-2

2.3.2 Wiring description

See figures below for I/Os wiring in various models.

- **MPNC100-01 version**

Base board(n°8 PT100 + n°2 4÷20mA)
Expansion board (n°2 PT100 + n°2 4÷20mA)

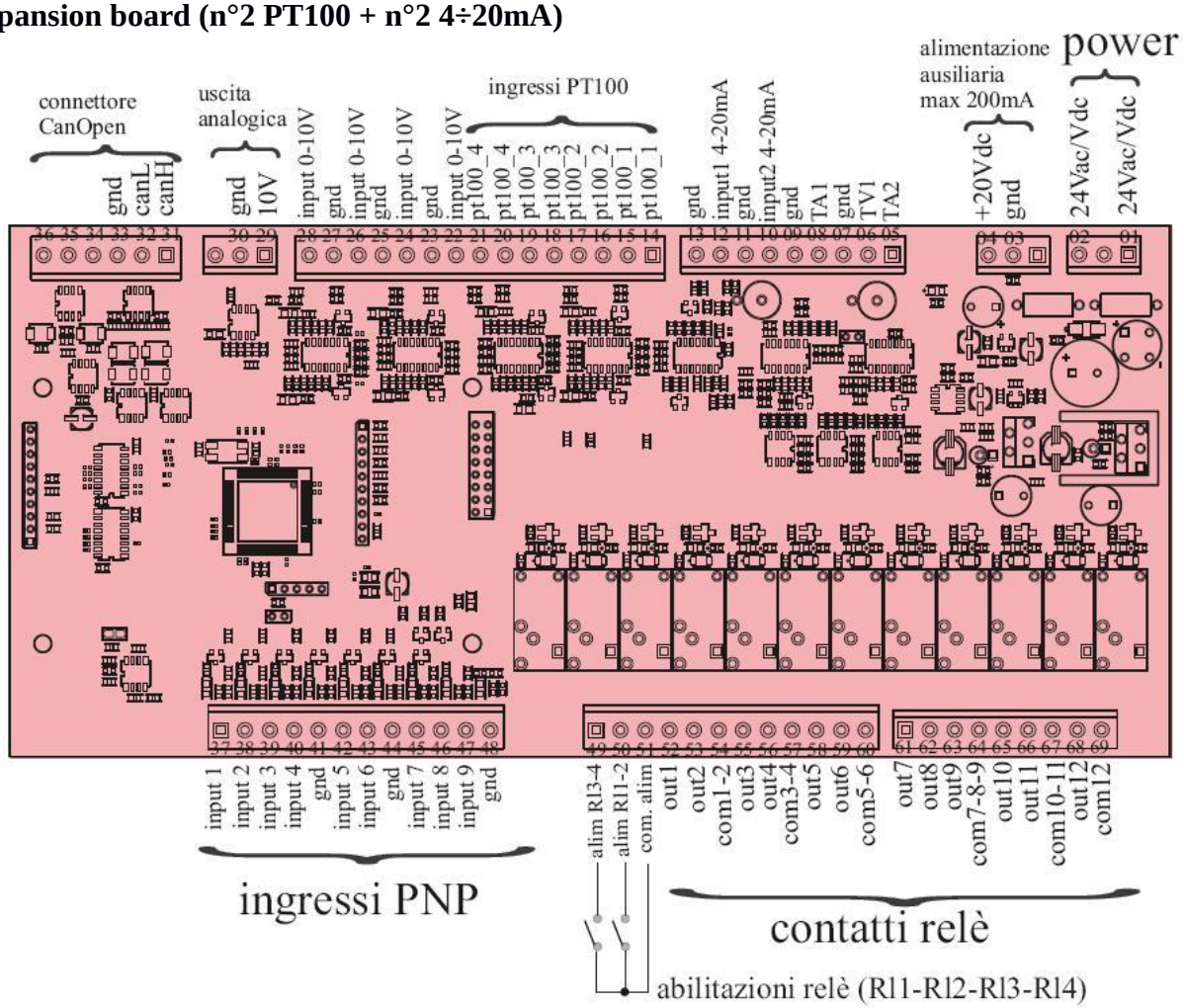

connettore CanOpen
gnd canL canH
uscita analogica
gnd 10V
ingressi PT100
input 0-10V
pt100_4 pt100_3 pt100_2 pt100_1
gnd input1 4-20mA input2 4-20mA TA1 TV1 TA2
alimentazione ausiliaria max 200mA
+20Vdc gnd
power
24Vac/Vdc
ingressi PNP
input 1 input 2 input 3 input 4 gnd input 5 input 6 gnd input 7 input 8 input 9 gnd
alim Rl3-4
alim Rl1-2
com. alim
out1 out2 com1-2 out3 out4 com3-4 out5 out6 com5-6 out7 out8 out9 com7-8-9 out10 out11 com10-11 out12 com12
contatti relè
abilitazioni relè (Rl1-Rl2-Rl3-Rl4)

Figure 2-3 base board wiring

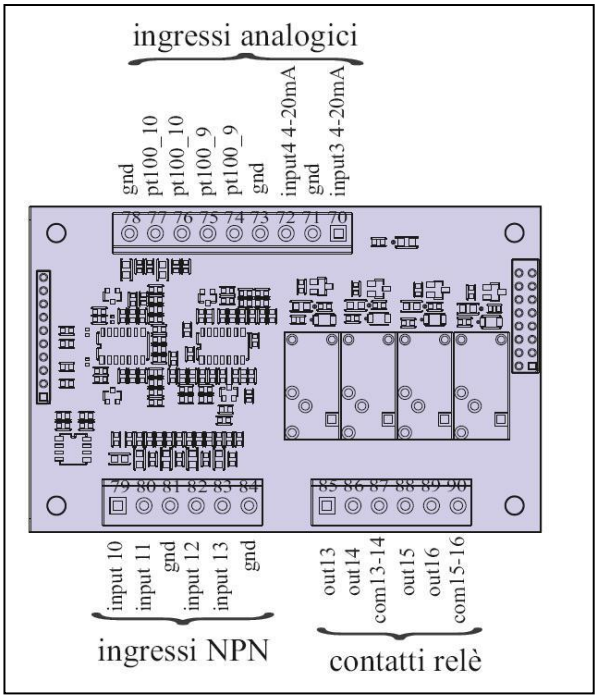

ingressi analogici
gnd pt100_10 pt100_10 pt100_9 pt100_9 gnd input4 4-20mA gnd input3 4-20mA
input 10 input 11 gnd input 12 input 13 gnd
ingressi NPN
out13 out14 com13-14 out15 out16 com15-16
contatti relè

Figure 2-4 expansion wiring

- **MPNC100-02 version**

Base board (n°4 PT100 + n°2 4÷20mA + n°4 0÷10V)
Expansion board (n°2 PT100 + n°2 4÷20mA)

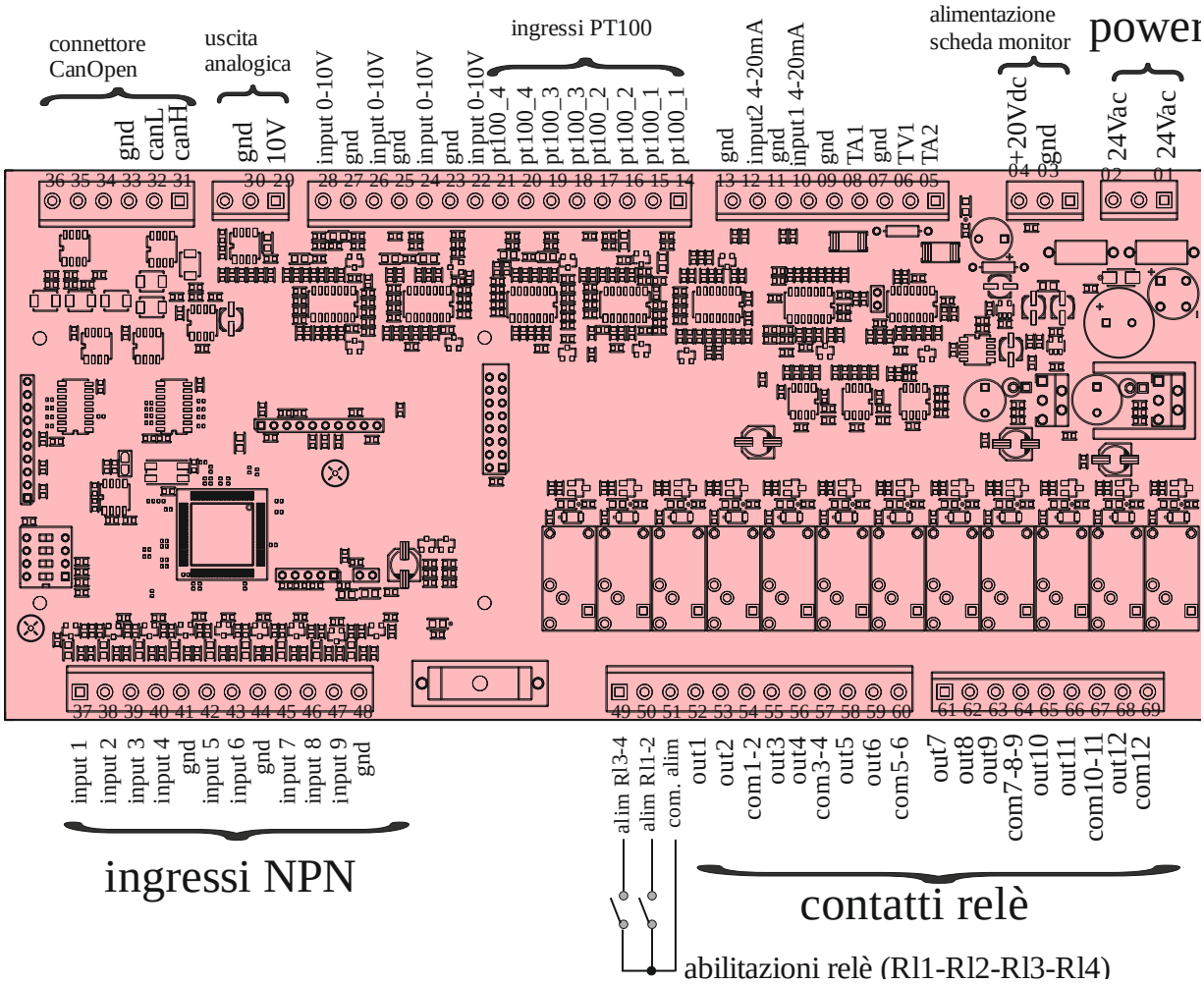

connettore CanOpen
uscita analogica
ingressi PT100
alimentazione scheda monitor
power
gnd canL canH
gnd 10V
input 0-10V gnd input 0-10V gnd input 0-10V gnd input 0-10V
pt100_4 pt100_4 pt100_3 pt100_3 pt100_2 pt100_2 pt100_1 pt100_1
gnd input2 4-20mA gnd input1 4-20mA gnd TA1 gnd TV1 TA2
+20Vdc gnd
24Vac 24Vac
36 35 34 33 32 31
30 29
28 27 26 25 24 23 22 21 20 19 18 17 16 15 14
13 12 11 10 09 08 07 06 05
04 03
02 01
37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60
61 62 63 64 65 66 67 68 69
input 1 input 2 input 3 input 4 gnd input 5 input 6 gnd input 7 input 8 input 9 gnd
alim Rl3-4 alim Rl1-2 com. alim out1 out2 com1-2 out3 out4 com3-4 out5 out6 com5-6 out7 out8 out9 com7-8-9 out10 out11 com10-11 out12 com12
ingressi NPN
contatti relè
abilitazioni relè (Rl1-Rl2-Rl3-Rl4)

Figure 2-5 base board wiring

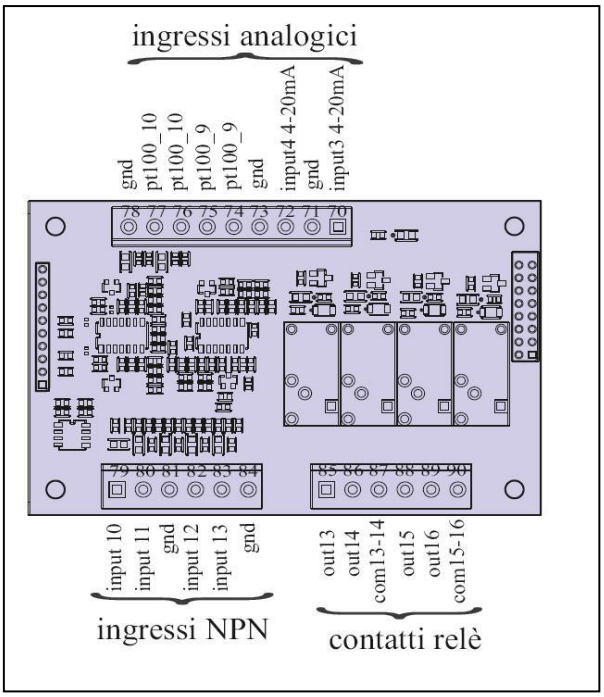

ingressi analogici
gnd pt100_10 pt100_10 pt100_9 pt100_9 gnd input4 4-20mA gnd input3 4-20mA
78 77 76 75 74 73 72 71 70
79 80 81 82 83 84
85 86 87 88 89 90
input 10 input 11 gnd input 12 input 13 gnd
out13 out14 com13-14 out15 out16 com15-16
ingressi NPN
contatti relè

Figure 2-6 expansion wiring

- **MPNC100-03 version**

Base board (n°8 PT100 + n°2 4÷20mA)

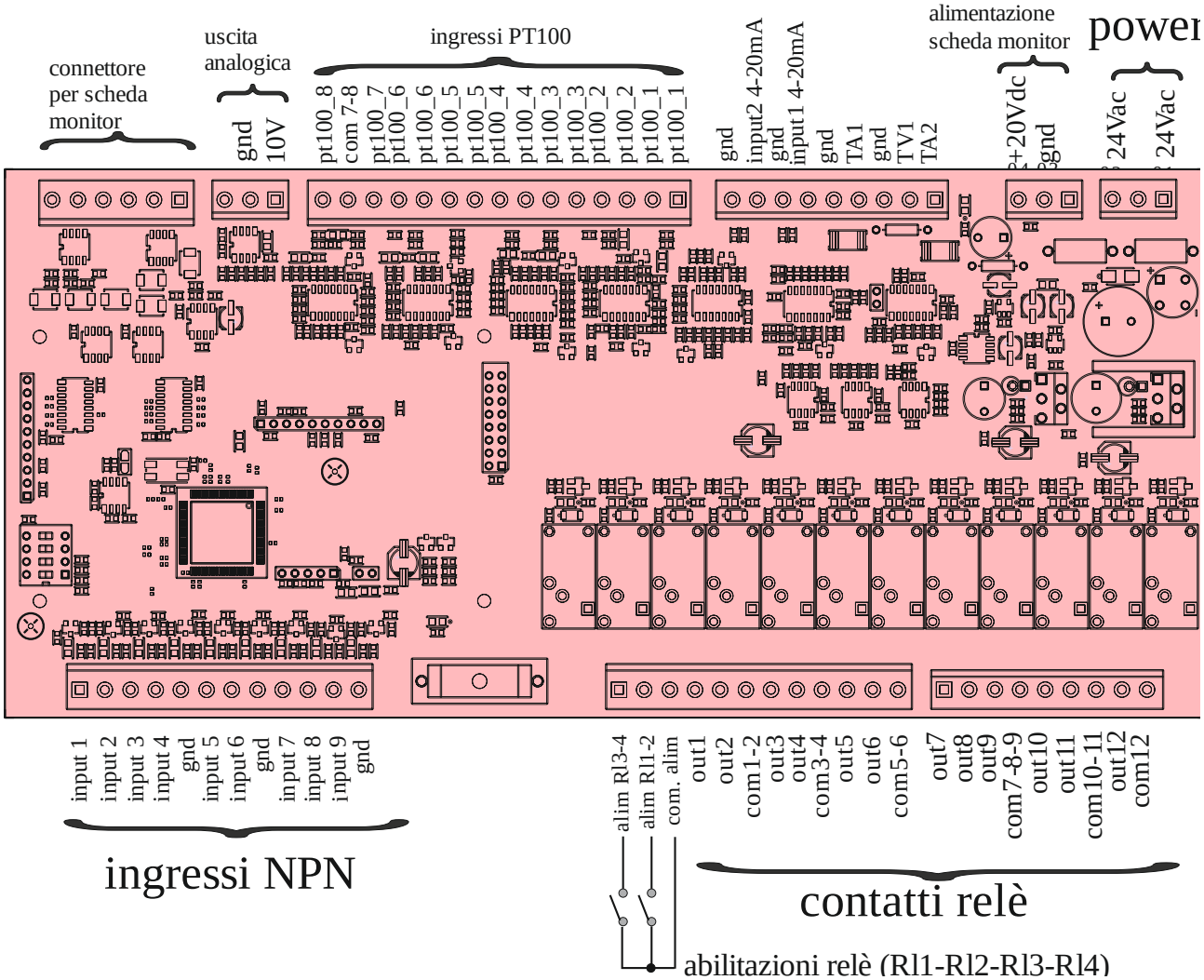


Figure 2-7 base board wiring

- **MPNC100-04 version**

Base board (n°4 PT100 + n°2 4÷20mA + n°4 0÷10V)

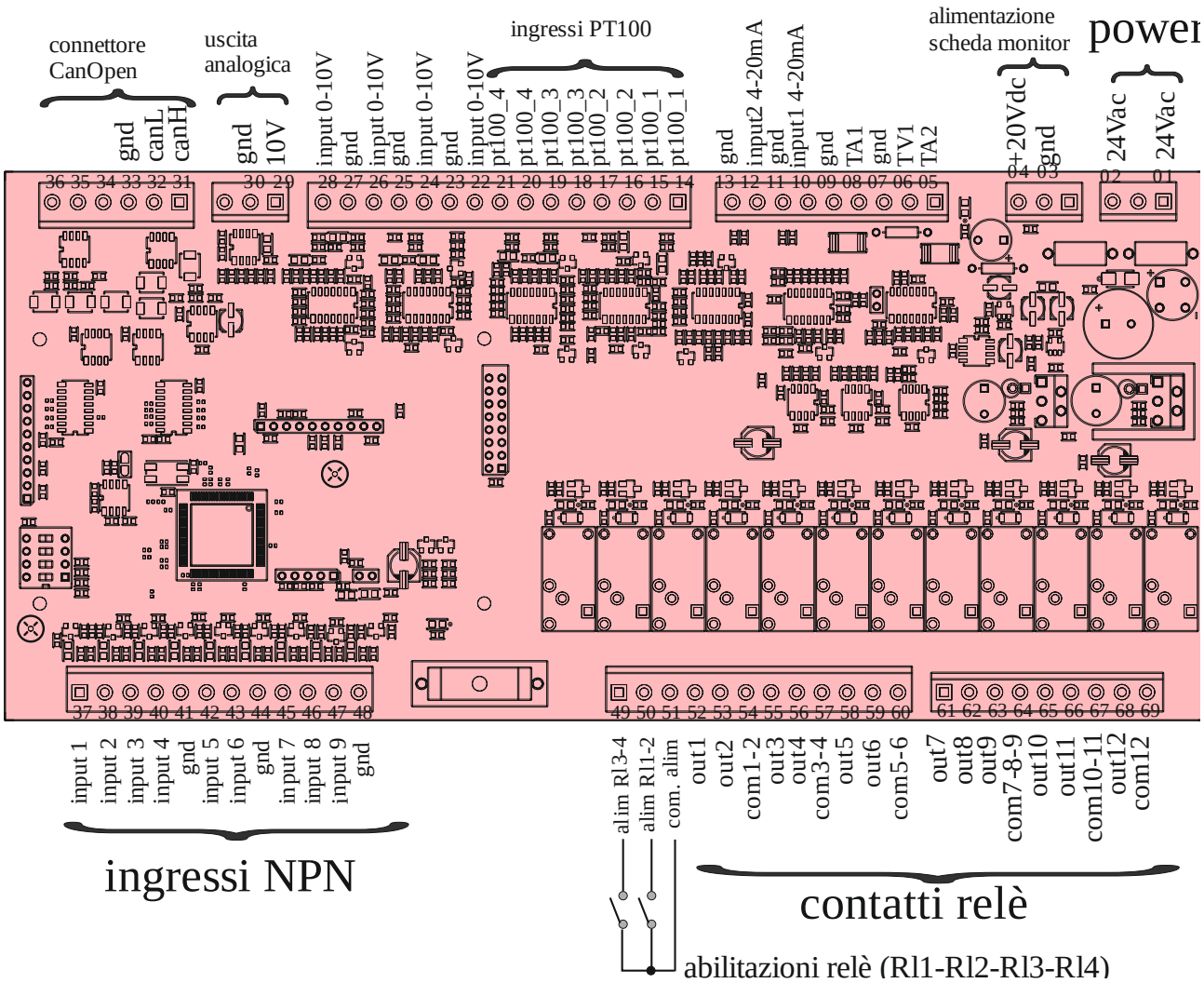

connettore CanOpen
uscita analogica
ingressi PT100
alimentazione scheda monitor
power
gnd canL canH
gnd 10V
input 0-10V gnd input 0-10V gnd input 0-10V gnd input 0-10V
pt100_4 pt100_4 pt100_3 pt100_3 pt100_2 pt100_2 pt100_1 pt100_1
gnd input2 4-20mA gnd input1 4-20mA gnd TA1 gnd TV1 TA2
+20Vdc gnd
24Vac 24Vac
36 35 34 33 32 31
30 29
28 27 26 25 24 23 22 21 20 19 18 17 16 15 14
13 12 11 10 09 08 07 06 05
04 03
02 01
37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60
61 62 63 64 65 66 67 68 69
input 1 input 2 input 3 input 4 gnd input 5 input 6 gnd input 7 input 8 input 9 gnd
ingressi NPN
alim Rl3-4 alim Rl1-2 com. alim out1 out2 com1-2 out3 out4 com3-4 out5 out6 com5-6 out7 out8 out9 com7-8-9 out10 out11 com10-11 out12 com12
contatti relè
abilitazioni relè (Rl1-Rl2-Rl3-Rl4)

Figure 2-8 base board wiring

2.3.3. Insert and remove board

To insert and remove the board act on the hook of the DIN rail.

Attention
Switch off devices before connecting them.

2.4. Power supply

2.4.1. System power

MPNC100 needs a 24VDC (-15% or +20 %) or 24VAC (-15% or +20 %) as shown in the figure.

Attention
Wrong voltage or frequency can damage the instrument.

2.4.2. Fuse

System has an internal fuse to protect output relays.

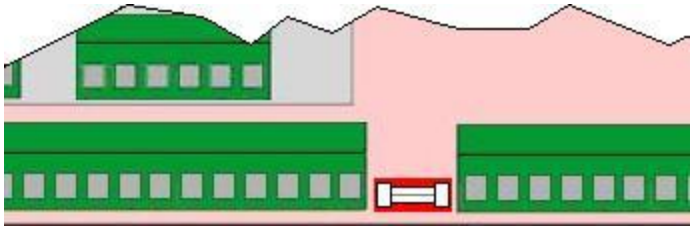


Figure 2-9

2.4.3. Grounding DIN rail

DIN rail with MPNC100 must be grounded to an earth connection.

2.4.4. Shield

Cable between CAN master and MPNC100 must be shielded and connected to ground at both sides.

3.0 MPNC100 operation

3.1 Description

MPNC100 is a CANopen DS401 node with 7 PDO in transmission and 4 in receiver. Node variables are in the following table:

Variable	Type	PDO	Direction PDO
Digital inputs 1 – 8	BYTE	1	TX
Digital inputs 9 – 14	BYTE	1	TX
Digital oututs 1 – 8	BYTE	1	RX
Digital oututs 9 – 16	BYTE	1	RX
PT100 – 1	INT	2	TX
PT100 – 2	INT	2	TX
PT100 – 3	INT	2	TX
PT100 – 4	INT	2	TX
Voltage input 0 – 10V - 1 / PT100 – 5	INT	3	TX
Voltage input 0 – 10V - 2 / PT100 – 6	INT	3	TX
Voltage input 0 – 10V - 3 / PT100 – 7	INT	3	TX
Voltage input 0 – 10V - 4 / PT100 – 8	INT	3	TX
TV 0 – 100Vac	INT	4	TX
TA1 0 – 100mA	INT	4	TX
TA2 0 – 100mA	INT	4	TX
Current input 4 – 20mA – 1	INT	4	TX
Current input 4 – 20mA – 2	INT	5	TX
Expansion Current input PT100 – 1	INT	5	TX
Expansion input PT100 – 2	INT	5	TX
Expansion Current input 4 – 20mA – 1	INT	5	TX
Expansion Current input 4 – 20mA – 2	INT	6	TX
Phase between TV and TA1	INT	6	TX
Phase between TV and TA2	INT	6	TX
Frequency TV	INT	6	TX
Frequency TA1	INT	7	TX
Frequency TA2	INT	7	TX
Voltage output 0 – 10V	INT	2	RX

3.1.1. Analogue input and output accuracy

Base board		
	Range	Accuracy
2 TA inputs	0-100mAac	? 1% vfs
4 PT100 inputs	-40.0°C - 200.0°C	± 0.5% vfs
4 0-10V inputs	0 - 10.00V	± 0.5% vfs
2 4÷20mA inputs	0 - 20.00mA	± 0.5% vfs
1 TV 100Vac input	0 - 100.0Vac	± 1% vfs
1 0÷10V analogue output	0 - 10.00V	± 1% vfs

Expansion board		
4 PT100 input	-40.0°C - 200.0°C	± 0.5% vfs
2 4÷20mA inputs	0 - 20.00mA	± 0.5% vfs

3.1.2. Bus Interface

MPNC100 is a CANopen DS401 node, connected to field by a 6 terminal board as in figure.

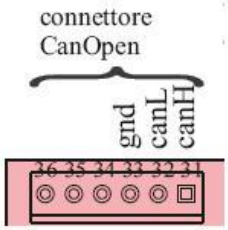


Figure 3-1

3.1.3. ID and Baud Rate setup

User can set with a DIP switch, the ID and Baud Rate. Address is set by dip 1 and 2 (address 1 to 4), Baud Rate set by dip 3 and 4. See table below for settings.

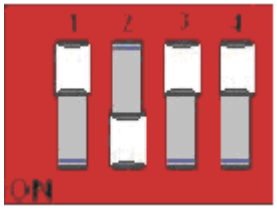


Figure 3-2: Node address setup(ID)

To set 1 on DIP switch switch to ON.

Address is as in table

S-1	S-2	ID nodo	S-4	S-3	Baudrate
0	0	1	0	0	125/kb/s
1	0	2	1	0	250/kb/s
0	1	3	0	1	500kb/s
1	1	4	1	1	1Mbit/s

Dip are read at power on of the instrument, so after set up power off and on the instrument.

4. Setup of MPNC100

In this chapter the setup procedure of a MPCN100 CANopen node linked to a MECT TPAC master CANopen is shown.

Follow these steps:

Configuration
Import CANopen variables in ATCM Control
Set baudrate and ID
send configuration file
Connect to a Master CANopen

Attention
Description in this chapter is an example only.

4.1. Configuration

To communicate it is necessary to configure CANopen net. MECT gives a free configuration software to easily setup the net.

To use CANopen nodes in a net, it is necessary to configure each node and to setup communication parameters to the master. To do the configuration an application software of the master constructor is used.
MECT gives a configuration software for the CANopen net (**CAN Builder**) on which TPAC are the masters.
To access the configurator by means of the dashboard interface open or create a CANopen project in the section of the Dashboard.

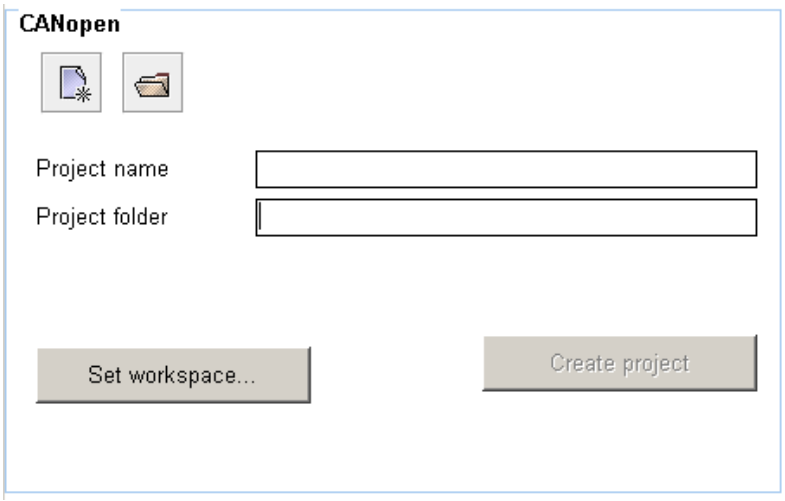


Figure 4-1

Click on the Nuovo Progetto icon and select project directory by the “Set workspace” key and define Project Folder. Give a name to the project and click Create Project key that runs **CAN Builder**.

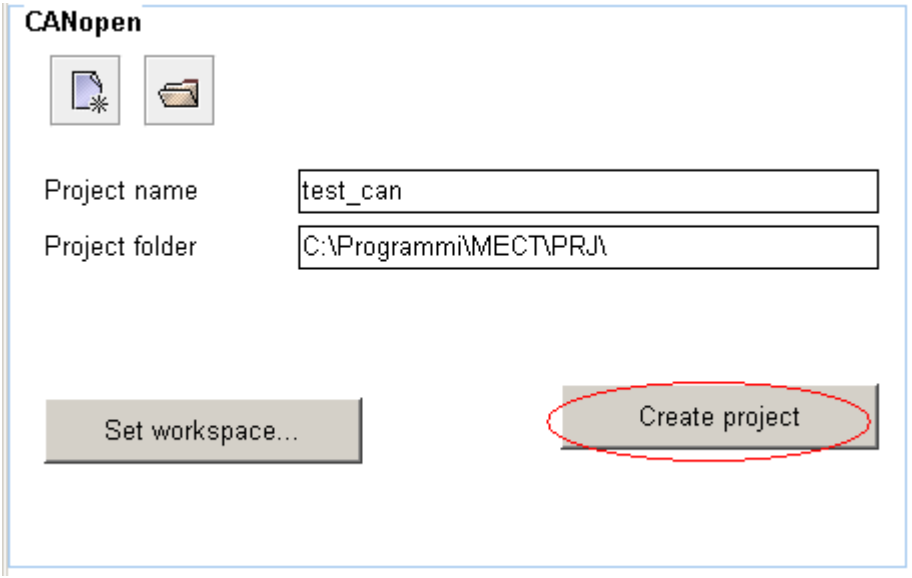


Figure 4-2

CAN Builder window is split into 3 sections:

EDS files list
CANopen node of the net
net parameters setup

4.1.1. EDS files list

On the left size of the screen there is the EDS files list to build CANopen net.

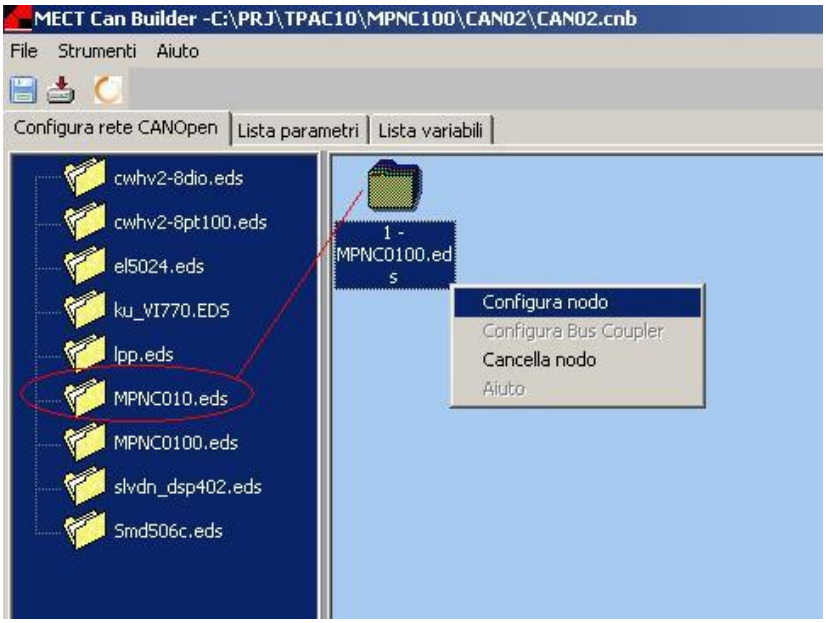


Figure 4-3

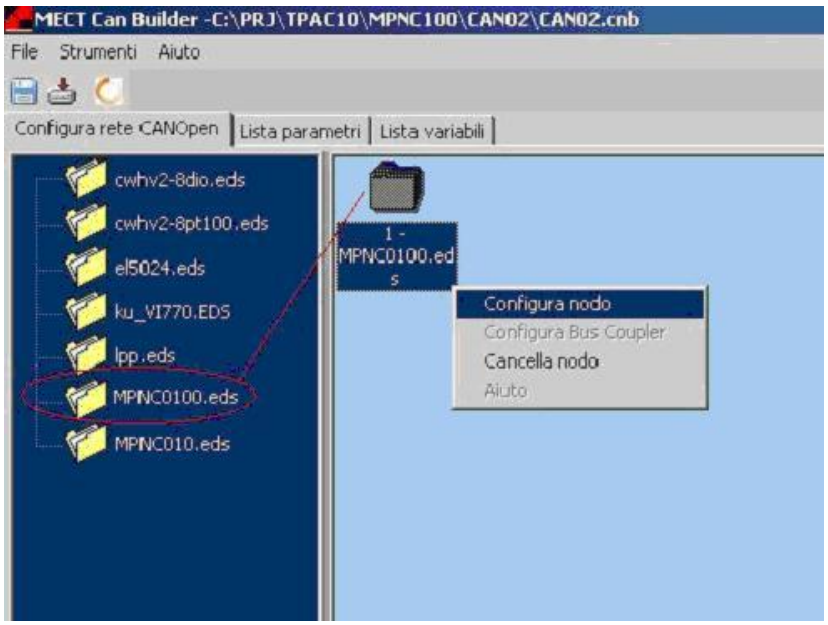
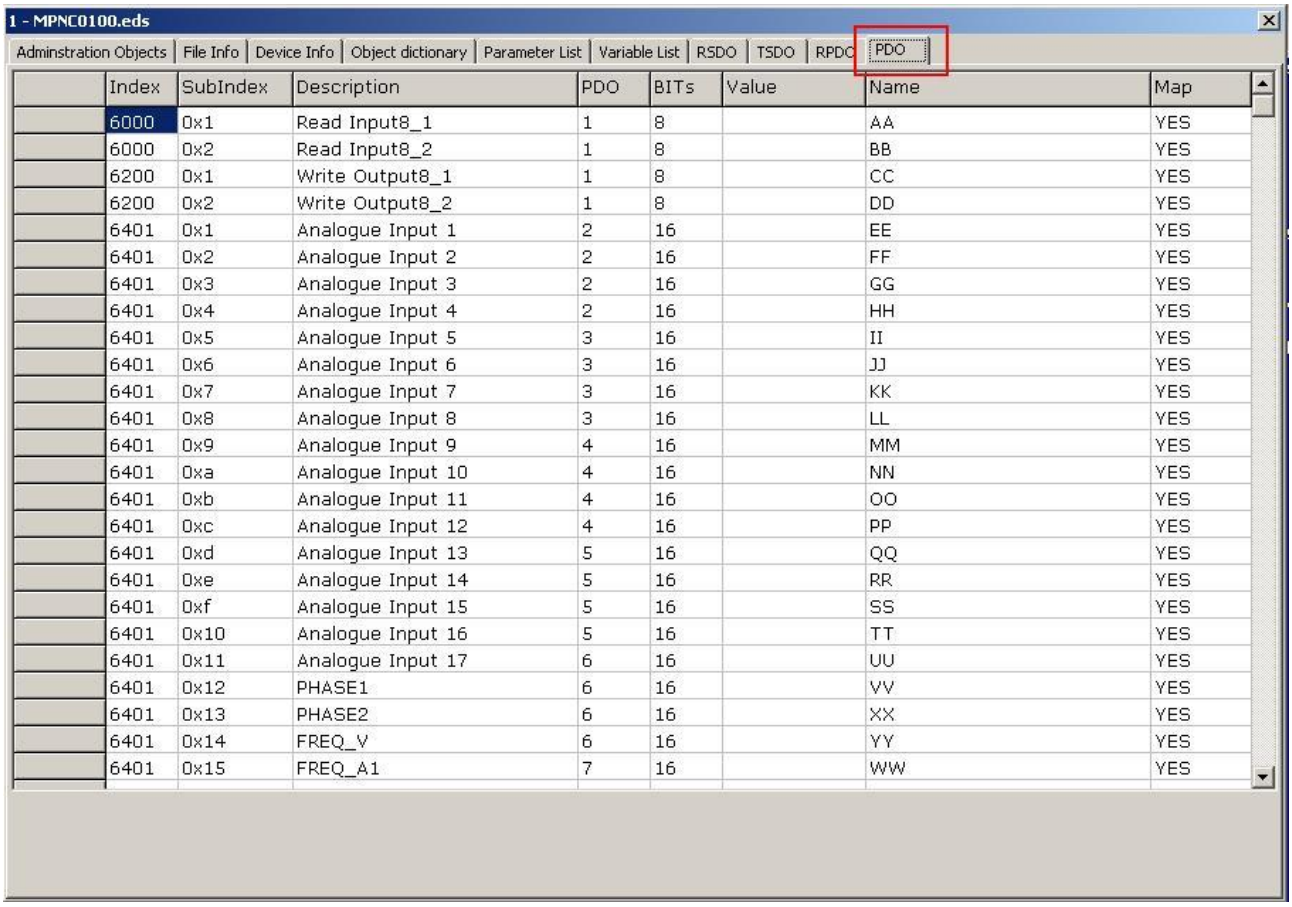


Figure 4-4

4.1.2. Insert node in the net

To insert an MPNC100 node in the CANopen net, double click it on the EDS files list. Selected node is placed on the middle of the page and a default net ID is assigned: first available ID. Then select it, press right mouse key, and select Configure node in the menu a configuration window appears.



	Index	SubIndex	Description	PDO	BITs	Value	Name	Map
	6000	0x1	Read Input8_1	1	8		AA	YES
	6000	0x2	Read Input8_2	1	8		BB	YES
	6200	0x1	Write Output8_1	1	8		CC	YES
	6200	0x2	Write Output8_2	1	8		DD	YES
	6401	0x1	Analogue Input 1	2	16		EE	YES
	6401	0x2	Analogue Input 2	2	16		FF	YES
	6401	0x3	Analogue Input 3	2	16		GG	YES
	6401	0x4	Analogue Input 4	2	16		HH	YES
	6401	0x5	Analogue Input 5	3	16		II	YES
	6401	0x6	Analogue Input 6	3	16		JJ	YES
	6401	0x7	Analogue Input 7	3	16		KK	YES
	6401	0x8	Analogue Input 8	3	16		LL	YES
	6401	0x9	Analogue Input 9	4	16		MM	YES
	6401	0xa	Analogue Input 10	4	16		NN	YES
	6401	0xb	Analogue Input 11	4	16		OO	YES
	6401	0xc	Analogue Input 12	4	16		PP	YES
	6401	0xd	Analogue Input 13	5	16		QQ	YES
	6401	0xe	Analogue Input 14	5	16		RR	YES
	6401	0xf	Analogue Input 15	5	16		SS	YES
	6401	0x10	Analogue Input 16	5	16		TT	YES
	6401	0x11	Analogue Input 17	6	16		UU	YES
	6401	0x12	PHASE1	6	16		VV	YES
	6401	0x13	PHASE2	6	16		XX	YES
	6401	0x14	FREQ_V	6	16		YY	YES
	6401	0x15	FREQ_A1	7	16		WW	YES

Figure 4-5

In the window select TAG: **PDO**

A window is shown with objects managed by MPNC100 by read/write PDOs. It is possible to give a variable name to each object, used inside PLC.

After the definition of all the variables, close the window, then in the file menu select:

Costruisci file di configurazione thet build files to send to TPAC

4.2. Impor CANopen variables in ATCM Control

To use the net node on the CAN net, variables created in **CAN Builder** must be imported in the PLC project to use them like others PLC variables. To do this, select file ResourceCan.gvl in the CANopen project folder, then drag it in the ATCM Control project.

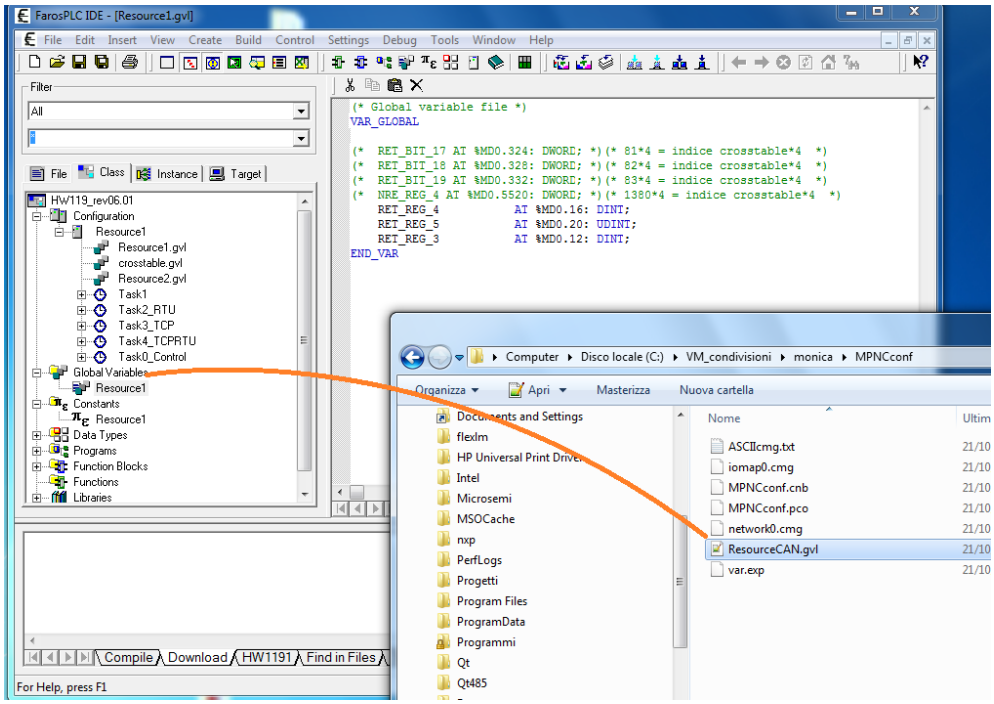


Figure 4-6

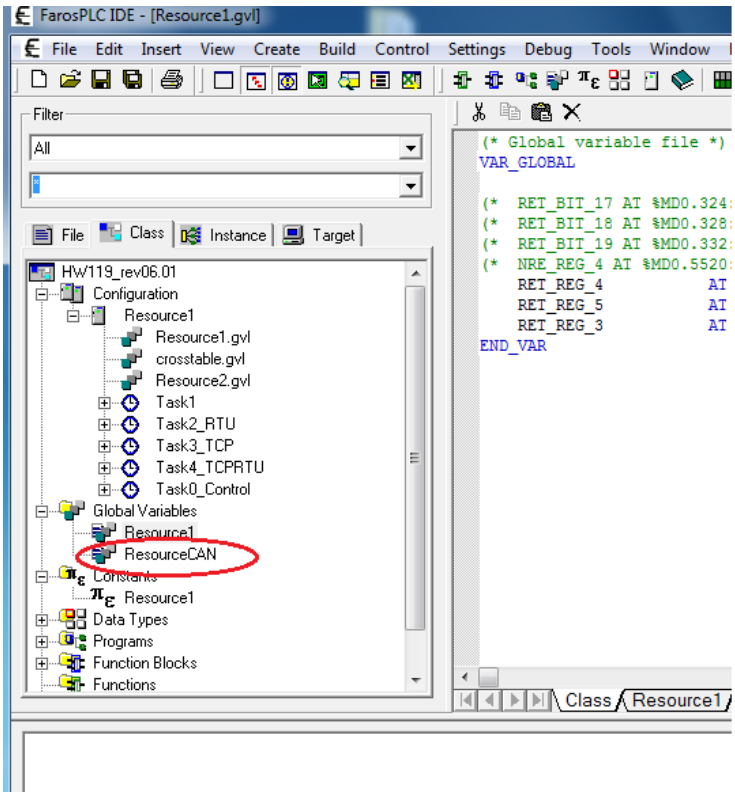


Figure 4-7

4.3. Net parameters configuration

To communicate master and slave must have correct net parameters.

In the right side of the window there are the parameters to configure CANopen net:

Baudrate: speed of data transmission
CAN channel: select which of the 2 TPAC channel is used
Cycle time of CANopen net
Guard time: time between 2 NG (Node Guarding) messages of the master
Life Time: numero di periodi di Guard time period time for master disconnected
Enable the sync send
Enable master NG send with toggle state bit

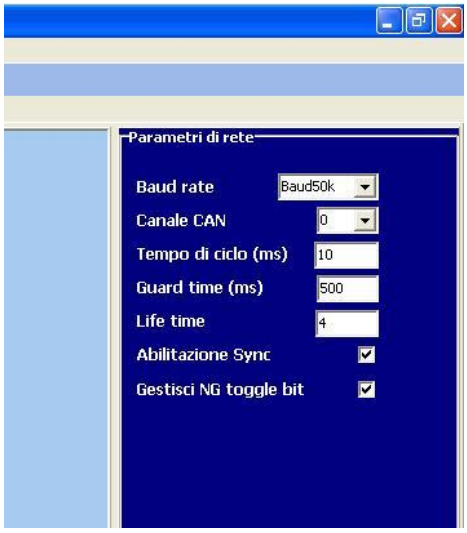


Figure 4-8

Setup the same baud rate on MPNC100 and TPAC CAN net, the rest of the parameters can be modified later.

Additional information
See TPAC tutorial for additional information on net parameters

4.3.1. ID Setup

master must know node ID to exchange data with it, to do this run**CAN Builder,** select the node, right click the mouse, in the menu select **Configura nodo**, in the window set the node ID in the **Administration Objects** section.

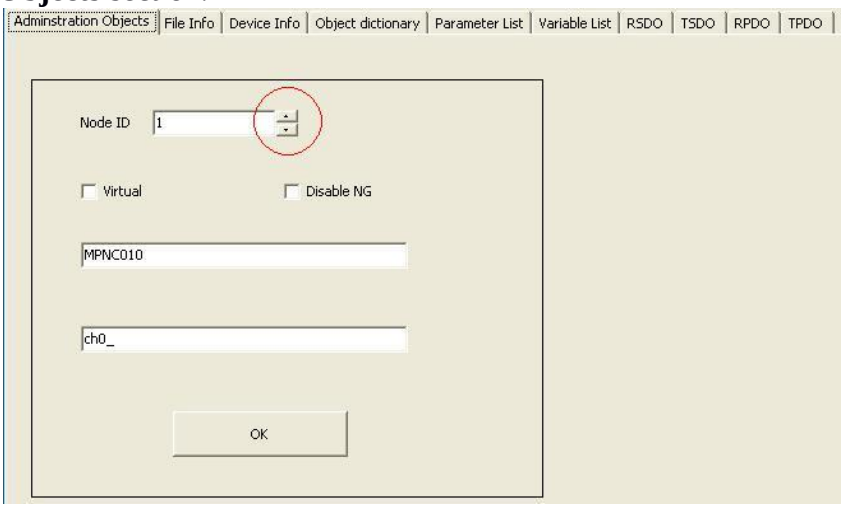


Figure 4-9

4.4. Configuration file send

After configuration files creation and baud rate and ID setup, it is necessary to send this information to CANopen master. TPAC receives this configuration by means of the LAN. In the menu File press: **Scarica i file di configurazione** and the following window appears:

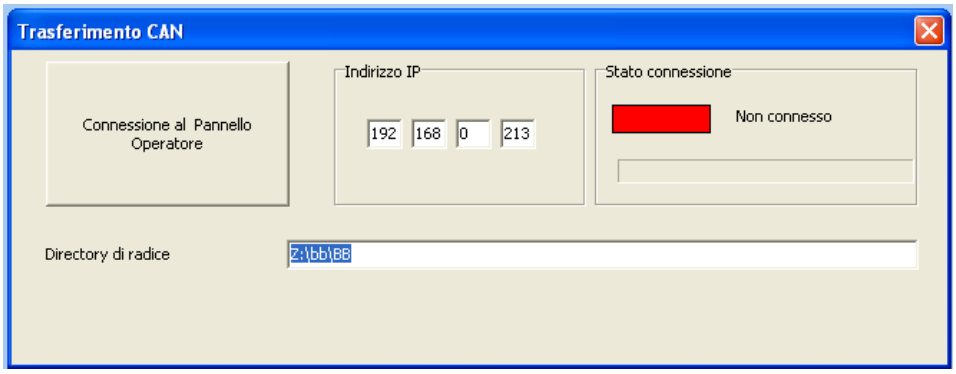


Figure 4-10

In the IP address section it is possible to setup the master address in the LAN network, the n press **Connessione al Pannello Operatore,** and the configuration files are transferred.

4.5. Connection to a CANopen master

To use data collected by MPNC100 it is necessary to connect it to a CANopen master. Connect MPCN100 to TPAC, power both instruments, a configuration session starts, at the end MPNC100 begins to exchange data with TPAC.

Attention
Setup baudrate and ID also on MPNC100.

4.6. Status LED

On MPNC100 there is a status LED showing the node status.

See table below for the message coding of the LED. In the table the LED status is shown as below:

ON on
OFF off
Bc: blinking

LED	STATUS	Description
ON	Run	MPNC100 is configured and running
OFF	startup	Off
Bc	Preoperational	MPNC100 is being configuring

5.0 CANopen

5.1 Description

CANopen is a serial net based un CAN bus. CANopen specification are defined by CIA (CAN in automation) and described by document DS301. Unlike other protocols, modules on bus have no address, but they are identified by messages. Conflicts on bus are solved at message level and only highest priority message are passed.

Information
CAN in Automation (CiA) gives more information and documentation on site:
can-cia.de

5.2. Communication Profile Area

Following table shows all objects supported by MPNC100.

Idx	Nome	Tipo	Significato
0x1000	Device Type	Unsigned32	Device Profile
0x1001	Error Register	Unsigned8	Errors are bit coded (DS401)
0x1005	COB-ID SYNC message	Unsigned32	COB-ID of the SYNC object
0x1008	Manufacturer Device Name	Visible String	Device name
0x1009	Manufacturer Hardware Version	Visible String	Hardware version
0x100A	Manufacturer Software Version	Visible String	Software version
0x100C	Guard Time	Unsigned16	Time for "Life Guarding Protocol"
0x100D	Life Time Factor	Unsigned8	Life Time Factor
0x1010	Store Parameters	Array Unsigned32	Parameter to store the configuration
0x1011	Restore default Parameter	Array Unsigned32	Parameter to restore the default configuration
0x1014	COB-ID Emergency Object	Unsigned32	COB-ID for the emergency Object
0x1400 0x140F	Receive PDO Communication Parameter	Record PDO Paramter	Communication parameter for the Rx PDO
0x1600 0x160F	Receive PDO Mapping Parameter	Record PDO Mapping	Mapping parameter for the Rx PDO
0x1800 0x180F	Transmit PDO Communication Parameter	Record PDO Paramter	Communication parameter for the Transmit PDO
0x1A00 0x1A0F	Transmit PDO Mapping Parameter	Record PDO Mapping	Mapping parameter for the Transmit PDO

Object 0x1000, Device Type

Indice	Sub indice	Nome	Tipo	Attributi	Default
0x1000	0	Device Type	Unsigned32	RO	-

Object specify the node profile. MPNC010 implements profile 401.

MSB	LSB		
0000.0000	0000.4321	Device Profile Number: **0x01** (Byte Alto)	Device Profile Number: **0x91** (Byte basso)

Bit
1 = 1, If at least one digital input is connected
2 = 1, If at least one digital output is connected
3 = 1, If at least one analogue input is connected
4 = 1, If at least one analogue output is connected

Object 0x1001, Error Register

Indice	Sub indice	Nome	Tipo	Attributi	Default
0x1001	0	Error Register	Unsigned 8	RO	-

This registry holds the internal errorsand is also part of the emergency message.

Bit	Significato
0	General Error
1	Current
2	Voltage
3	Temperature
4	Communication
5	Device profile specific
6	Reserved
7	Manufacturer specific

Object 0x1005, COB-ID SYNC message

Indice	Sub indice	Nome	Tipo	Attributi	Default
0x1005	0	COB-ID SYNC	Unsigned 32	RW	0x00000080

Bit31	Bit11	Bit10	Bit0
Riservato (sempre 0)		COB-ID	

Object 0x1008, Manufacturer Device Name

Indice	Sub indice	Nome	Tipo	Attributi	Default
0x1008	0	Manufacturer	Visible	RO	0

Object holds MPNC100 name

Object 0x1009, Manufacturer Hardware Version

Indice	Sub indice	Nome	Tipo	Attributi	Default
0x1009	0	Manufacturer	Visible	RO	Current HW-Version

Object 0x100A, Manufacturer Software Version

Indice	Sub indice	Nome	Tipo	Attributi	Default
0x100A	0	Manufacturer Soft-	Visible	RO	Current SW-Version

Object 0x100C, Guard Time

Indice	Sub indice	Nome	Tipo	Attributi	Default
0x100C	0	Guard Time	Unsigned16	RW	0

Object holds time in millisecond, the master frequency request to the slave for the status (Guard Time)

Object 0x100D, Life Time Factor (LFT)

Indice	Sub indice	Nome	Tipo	Attributi	Default
0x100D	0	Lifetime Factor	Unsigned8	RW	0

LifeTime Factor is part of the Node Guarding protocol. If slave verifies an elapsed time more than LTF*NG since last reception of NG, assumes that master is not working properly.

Object 0x1014, COB-ID Emergency Object

Indice	Sub indice	Nome	Tipo	Attributi	Default
0x1014	0	COB ID EMCY	Unsigned32	RW	0x80+Module-ID

Object 0x1400– 0x140F, Rx PDO Communication Parameter

Indice	Sub indice	Nome	Tipo	Attributi	Default
0x1400 0x140F	0	Max. supported Entries	Unsigned 8	RO	2
	1	COB-ID	Unsigned 32	RW	Idx 0x1400 0x200 + Module ID Idx 0x1401 0x300+Module-ID Idx 0x1402 0x400+Module-ID Idx 0x1403 0x500+Module-ID Idx 0x1404-141F 0x80000000
	2	Transmission type	Unsigned 8	RW	255

Object 0x1600– 0x160F, Rx PDO Mapping Parameter

Indice	Sub indice	Nome	Tipo	Attributi	Default
0x1600 0x160F	0	Number of mapped Objects	Unsigned 8	RW	-
	1 to 8	1.Object to 8.Object	Unsigned32	RW	-

Object 0x1800– 0x180F, Transmit PDO Communication Parameter

Indice	Sub indice	Nome	Tipo	Attributi	Default
0x1800 0x180F	0	Max. supported Entries	Unsigned8	RO	5
	1	COB-ID	Unsigned 32	RW	Idx 0x1800 0x180+Module-ID Idx 0x1801 0x280+Module-ID Idx 0x1802 0x380+Module-ID Idx 0x1803 0x480h+Module ID Idx 0x1804 0x80000000
	2	Transmission type	Unsigned 8	RW	255
	3	Inhibit Time	Unsigned 16	RW	-

Object 0x1A00 – 0x1A04, Transmit PDO Mapping Parameter

Indice	Sub indice	Nome	Tipo	Attributi	Default
0x1AA00 0x1A0F	0	Number of mapped Objects	Unsigned 8	RW	-
	1 to 8	1.Object to 8.Object	Unsigned 32	RW	-

Standard Device Profile Area – DS 401
MPNC100 supports profile DS 401,

Idx	Nome	Tipo	Significato
0x6000	Read Input 8 Bit	Array Unsigned8	Data of digital input I/O modules
0x6200	Write Output 8-Bit	Array Unsigned8	Data of digital output I/O modules
0x6401	Read Analog Input 16-Bit	Array Unsigned16	Data of analog input I/O modules (16 bit)
0x6411	Write Analog Output 16-Bit	Array Unsigned16	Data of analog output I/O modules (16 bit)

Object 0x6000, Digital Inputs

Indice	Sub indice	Nome	Tipo	Attributi	Default
0x6000	0	Number of digital input blocks	Unsigned 8	RO	-
	1	1. input block	Unsigned 8	RO	-
	2	2. input block	Unsigned 8	RO	-

Object 0x6200, Digital Outputs

Indice	Sub indice	Nome	Tipo	Attributi	Default
0x6200	0	Number of digital output blocks	Unsigned8	RO	-
	1	1. output block	Unsigned8	RW	0
	2	2. output block	Unsigned8	RW	0

Object 0x6401, Analog Inputs 16 Bit

Indice	Sub indice	Nome	Tipo	Attributi	Default
0x6401	0	Number analog input channels (16Bit)	Unsigned8	RO	-
	1	1. channel	Unsigned16	RO	-
	....	....	....	....	....
	4	4. channel	Unsigned16	RO	-

Object 0x6411, Analog Outputs 16 Bit

Indice	Sub indice	Nome	Tipo	Attributi	Default
0x6411	0	Number analog output channels (16Bit)	Unsigned8	RO	-

	1	1. channel	Unsigned16	RW	0
	....	....	....	....	....
	4	4. channel	Unsigned16	RW	0

5.3. Error Message (Emergency)

Emergency message is sent in the event of a critical event that must be known by net components. Structure and coding of emergency messages are in the table below:

Byte:	0 1	2	3 7	
Nome	Codice di errore	Registro di errore		Note
	0x0000*	0x00	00 00 00 00 00	Power ON message
	0x8100*	0x80	00 01 00 00 00	The time between two node guarding telegrams is greater than Guard_Time * Life_Time_Faktor.
	0x8100*	0x80	00 02 00 00 00	The time span between two SyncObjects is longer than the communication_Cycle_Period
	0xFF00*	0x80	00 02 EE EE NN	Error on terminal - EE: code - NN :terminal in error number